

What is claimed is:

1. A picture coding apparatus comprising:  
a picture analyzing unit for analyzing source picture data to obtain coding difficulty information;  
a picture conversion unit for converting a picture format of the source picture data;  
an coding unit for encoding picture data converted by the picture conversion unit; and  
a conversion controller for controlling the picture conversion unit based on the coding difficulty information to convert the picture format using spatial conversion, temporal conversion, or both.
2. A picture coding apparatus as described in claim 1, wherein the coding difficulty information is information about the source picture data, including at least one of: spatial frequency component information, noise component information, interframe change information, and interframe motion vector information.
3. A picture coding apparatus as described in claim 1 or 2, wherein the coding unit encodes picture data based on conversion information input thereto by the picture conversion unit, and multiplexes the conversion information to the picture data.

✓ 4. A picture coding apparatus as described in any of claims 1 to 3, wherein the picture analyzing unit analyzes the source picture data using a specific threshold value.

✓ 5. A picture coding apparatus as described in claim 4, wherein the picture analyzing unit determines the threshold value based on a coding result from the coding unit.

✓ 6. A picture coding apparatus comprising:  
a picture area dividing unit for dividing a screen of source picture data into a plurality of areas;  
a prefilter for preprocessing the source picture data;  
a coding unit for coding the source picture data preprocessed by the prefilter; and  
a filter control unit for controlling a prefilter characteristic by picture area.

✓ 7. A picture coding apparatus as described in claim 6, wherein the picture area dividing unit divides the source picture data screen into a middle area and an area therearound.

✓ 8. A picture coding apparatus as described in claim 6 or 7, further comprising a picture analyzing unit for analyzing a subject type in the source picture data;

the filter control unit controlling said prefilter characteristic based on subject information analyzed by the picture analyzing unit.

✓ 9. A picture coding apparatus as described in claim 8, wherein the picture analyzing unit detects a picture detail level based on a variance and/or mean value per small block of at least one of a luminance signal and color difference signal, and identifies a subject type from this detail level.

✓ 10. A picture coding apparatus as described in claim 7, further comprising a picture analyzing unit for analyzing a subject type in the source picture data;

the picture area dividing unit shifting the middle area based on the subject type analyzed by the picture analyzing unit.

✓ 11. A picture coding apparatus comprising:  
a picture area dividing unit for dividing a screen of source picture data into a plurality of areas;  
a coding parameter calculating unit for calculating a coding parameter by picture area; and  
a coding unit for coding the source picture data by switching the coding parameter by picture area.

12. A picture coding apparatus as described in claim 11, wherein the picture area dividing unit divides the source picture data screen into a middle area and an area therearound.

13. A picture coding apparatus as described in claim 11 or 12, further comprising a picture analyzing unit for analyzing a subject type in the source picture data;

the coding parameter calculating unit calculating a coding parameter based on subject information analyzed by the picture analyzing unit.

14. A picture coding apparatus as described in claim 13, wherein the picture analyzing unit detects a picture detail level based on a variance and/or mean value per small block of at least one of a luminance signal and color difference signal, and identifies a subject type from this detail level.

15. A picture coding apparatus as described in claim 13, wherein the picture analyzing unit detects a subject within a specific level range of a primary color based on a mean color difference signal value per small block, and identifies a subject type from the detected value.

16. A picture coding apparatus as described in claim 12, further comprising a picture analyzing unit for analyzing a

subject type in the source picture data;

the picture area dividing unit shifting the middle area based on the subject type analyzed by the picture analyzing unit.

17. A picture coding apparatus comprising:

a preprocessing unit for preprocessing source picture data;

a coding unit for coding source picture data output from the preprocessing unit, and then locally decoding the coded source picture data; and

a preprocessing controller for obtaining a difference between the source picture data and locally decoded data output from the coding unit, and controlling the preprocessing unit based on this difference data.

18. A picture coding apparatus as described in claim 17, wherein the preprocessing unit has a bandwidth limiter, and the preprocessing controller controls the bandwidth limiter to narrow a frequency band as the difference between the locally decoded data and source picture data increases.

19. A picture coding apparatus as described in claim 17 or 18, wherein the preprocessing unit has a pel count conversion unit, and

the preprocessing controller controls the pel count conversion unit to increase the decimation rate as the difference between the locally decoded data and source picture data increases.

4 ✓ 20. A picture coding apparatus as described in any of claims 17 to 19, further comprising a scene change detection unit to which the source picture data is input and which detects a scene change when a correlation between temporally adjacent frames is low;

the preprocessing controller controls interrupting operation of the preprocessing unit on temporally adjacent frames where a scene change occurs.

6 ✓ 21. A picture coding method for coding source picture data after picture conversion, comprising a step for:

converting a picture data format based on coding difficulty information using spatial conversion, temporal conversion, or both.

7 ✓ 22. A picture coding method as described in claim 21, wherein the coding difficulty information is information about the source picture data, including at least one of: spatial frequency component information, noise component information, interframe change information, and interframe motion vector

information.

23. A picture coding method for coding source picture data after preprocessing the source picture data through a prefilter, comprising a step for:

dividing a screen of source picture data into a plurality of areas; and

changing a filter characteristic of the prefilter by picture area to preprocess the source picture data.

24. A picture coding method for coding source picture data, comprising a step for:

dividing a screen of source picture data into a plurality of areas; and

coding the source picture data by switching the coding parameter by picture area.

25. A picture coding method comprising a step for:

obtaining a difference between the source picture data and locally decoded data that is source picture data coded and then locally decoded; and

controlling preprocessing source picture data based on the resulting difference data.

26. A picture coding method as described in claim 25, wherein

6 controlling preprocessing of the source picture data is characterized by narrowing a frequency band as the difference between the locally decoded data and source picture data increases.

7 27. A picture coding method as described in claim 25 or 26, wherein controlling preprocessing of the source picture data is characterized by increasing a decimation rate as the difference between the locally decoded data and source picture data increases.